

SEISMIC DATA ACQUISITION SYSTEM AND METHOD FOR DOWNHOLE USE

Abstract

A method and system for conducting a seismic survey by lowering a string of intelligent clampable sensor pods with 3-C sensors into a borehole. The string of pods is serially interconnected by a cable having a conductor pair which provides both power and data connectivity. The uppermost sensor pod is connected to a down-hole telemetry and control module. The cables and pods use connectors to allow assembly, customization, repair, and disassembly on site. Each pod has an upper and a lower connector, a processor, and memory which is coupled to both the upper and the lower connectors. Each pod is capable of simultaneous and independent serial communications at each connector with the memory. The telemetry and control module is designed to query the pods to determine the system configuration. The telemetry and control module then simultaneously triggers all pods to acquire data, the pods storing the collected data locally in the memory. After data collection, the controller simultaneously signals the pods to immediately transfer data serially from the local memory

to the next higher adjacent pod and receive data, if any, from the lower adjacent pod, if any, storing the received data in memory. The first data transferred from each pod is that data collected by its local sensors. Subsequent data originates from lower pods and is simply passed up the string of pods to the telemetry and control module. In other words, the pods communicate in a bucket brigade fashion.